

Intermontanus

Published by the Utah Association of Herpetologists

Volume 3

July 1994

Number 4

NEWS & ANNOUNCEMENTS

TORTOISE CARCASSES SPUR INVESTIGATION

By **Mike Gorrell** *The Salt Lake Tribune* (28 June, 1994, pages C-1 & C-2)

Federal officials are looking into the deaths of two desert tortoises found along the road to an entertainment complex outside St. George.

The deaths, which could be violations of the Endangered Species Act, are being investigated by the Department of Justice and the Fish & Wildlife Service, said Robert Williams, Fish & Wildlife's state director for Utah.

Williams said two tortoise carcasses were discovered last month on a road leading to the Tuacahn entertainment arts complex, which the Heritage Arts Foundation is building near the mouth of Snow Canyon State Park.

The \$18 million complex takes its name from a Mayan word meaning "canyon of the gods." When it opens next summer, the 80-acre site will have an 1,800-seat amphitheater, a 300-seat theater, a recording studio, classrooms and administrative offices.

The complex itself does not encompass habitat considered critical to the desert tortoise's survival but the access road does.

Doug Stewart, Foundation executive director, said that on May 24 the contractor building the complex found a tortoise carcass just off the road. It had been dead for some time, and the cause was uncertain. The Foundation notified the Fish & Wildlife Service which sent investigators to the site.

A week later, he said, another dead tortoise was found. This one was in the road and had been run over. An in-house probe determined a truck driven by a subcontractor had killed the animal. Stewart said the Foundation relayed the information to the Fish & Wildlife Service, which again investigated the situation.

"That's the only [death] we will admit to," Stewart said. "We are dismayed and regretful this thing has happened . . . because we know it was no small matter.

"We have worked vigorously to protect the tortoise. We have two checkpoint stations at the beginning and end of the road. We have watchmen stopping cars. We have a strictly enforced 20 mph speed limit, monitored with a speed gun. And we have tortoise-education programs for our subcontractors," Stewart said.

What the Foundation does not have is a permit, known in Fish & Wildlife Service parlance as a "Section 10," that would cover the "incidental taking" of a desert tortoise or any protected species.

The permit specifies measures that must be taken to minimize or mitigate a development's impact on the tortoise. It also would have provided legal protection for the Foundation in case a desert tortoise was killed.

But lacking a permit, Williams said, the Foundation could face a fine of up to \$50,000 for each dead reptile and the remote possibility of prison sentences for individuals who violated the law.

"This is the risk you run without a Section 10," Williams said. "Because there are two animals dead and the potential for additional animals to die it is the opinion of our law-enforcement people that something has to be done. There has to be some level of accountability."

Obtaining a Section 10 permit can be cumbersome, Williams

acknowledged. But he predicted the Foundation would have one now — and not be facing possible sanctions — if it had followed his advice and applied for a permit before construction started.

Stewart said the Foundation has applied indirectly for a Section 10 permit through Washington County, which has developed a "Habitat Conservation Plan" to protect lands vital to the desert tortoise while minimizing the impacts on private landowners.

The Fish & Wildlife Service is reviewing the plan, a key first step toward the acquisition of a Section 10 permit.

"We're waiting for the response," Stewart said. "It doesn't seem prudent to go through the tremendous amount of red tape to apply for a permit independently when we're expecting the county [to get] one in a couple of weeks."

That time frame may be overly optimistic. The Fish & Wildlife Service is expected to comment within weeks on the habitat conservation plan. But that merely will initiate a rewrite process which must be completed along with an implementation plan and an environmental impact statement before a Section 10 permit can be granted.

"This accident shows the need for speedy implementation of the habitat conservation plan," Stewart said.

To the Southern Utah Wilderness Alliance (SUWA), the tortoises' deaths show that neither the Foundation nor the Justice Department have been diligent about protecting the reptile.

"The Foundation's behavior makes it abundantly clear that the tortoise will not be protected without court action," said SUWA staff attorney Heidi McIntosh, "It's time for the Justice Department to step up to the plate and enforce the mandates of the [Endangered Species] law."

The Mojave population of desert tortoise is listed by the Fish & Wildlife Service as a species whose existence is threatened by habitat destruction from urban and agricultural development, roads, vehicles, grazing, collectors and disease.

NEW PUBLICATIONS

St. Martin's Press has a couple of new herpetological titles. The first is *Sea Snakes* by Sneed B. Collard (\$12.95). The book features rare underwater photography as well as realistic drawings and carefully researched text. It is a satisfying reference for kids and adults alike.

The second book, *Tracking the Vanishing Frogs* by Kathryn Phillips (\$22.95) tells the story of scientists and their search for answers for why these amphibians are disappearing at an alarming rate. The author is a respected journalist who has written for *Omni*, *International Wildlife*, *The Los Angeles Times Magazine*, and *Discover*. For more information about this book see the review in this issue.

These books can be ordered by sending a check or Visa/Mastercard information to St. Martin's Press, Sales Department, 175 Fifth Avenue, New York, NY 10010. Add \$3 shipping for the first book and \$0.75 for each additional book.

N.G. Publishing Inc. has several new titles in herpetology available this year. *The 1994-1995 Directory: A Guide to North American Herpetology* (\$15.00) is considerably larger and more comprehensive than the 1993-1994 *Directory*. The directory lists state regulations, CITES and Federally protected species, zoos & exhibits, U.S. & foreign societies, a guide to products and services, universities with

herpetology programs, breeders, veterinarians, plus several additional herpetological services.

Other titles include *Medical Herpetology* by Steve Grenard (\$19.95) which discusses the relationship between herpetology and medical science. *Snakes of Pennsylvania* by William B. Allen, Jr. (\$4.95). *State, Federal, and C.I.T.E.S. Regulations for Herpetologists* by Norman Frank and Erica Ramus (\$4.50) is a 64-page unabridged excerpt from the 1994-1995 *Directory. A Complete Guide to Scientific and Common Names of Reptiles and Amphibians of the World* by Norman Frank and Erica Ramus (\$19.95) to be released fall/winter 1994.

These books can be ordered by sending a check or Visa/Mastercard information to N. G. Publishing Inc., Route 61 Hwy., RD #3, Box 3709-A, Pottsville, PA 17901.

RESEARCH UPDATE

NEW SNAKEBITE ANTIVENOM IN HUMAN CLINICAL TRIALS

Jim Glenn

Venom Research Lab
VA Medical Center
Salt Lake City, Utah

For several years, the VA's Venom Research Laboratory has been involved in an international research project to develop new antivenoms for human and veterinary medical therapy of snakebite envenomation. The project combines the expertise and technology of Therapeutic Antibodies, Inc., a biopharmaceutical company, and university scientists in Europe and the U.S., including the Salt Lake City VAMC Venom Research Laboratory.

A new antivenom against rattlesnake venoms is presently being tested in human clinical trials in the southwestern and southeastern United States. The new antivenom is different than the current snakebite antivenom product in several ways. The antibodies to snake venoms are produced by immunizing sheep instead of horses.

Sheep have been discovered to be better and more consistent antibody producers than horses, and antivenom production is more economical. Also, humans are less likely to be allergic to sheep serum products than they are to horse serum products due to previous exposure to other horse serum products.

Instead of using a whole immunoglobulin G (IgG) antibody product (the currently available antivenom), the sheep IgG is reduced to its Fab antibody fragment. This antibody fragment is lacking the Fc region of the IgG that binds serum complement, which often causes severe side-effects in snakebite victims administered the horse serum whole antibody (IgG) product. The Fab antibody fragment is also much smaller and is distributed into tissues more rapidly, thereby neutralizing venom toxins more rapidly and efficiently.

The Fab antibodies that are only specific for the snake venom toxins are further purified by a process known as affinity chromatography from the total Fab collected. This greatly reduces (by 50-75%) the amount of foreign protein administered to the snakebite patient.

Testing of the new Fab antivenom product in mice has demonstrated the product to be a safer and more effective therapeutic agent. A similar snakebite product (also produced by Therapeutic Antibodies, Inc.) is expected to be approved shortly in Europe for treatment of envenomations by the European adder, *Vipera berus*.

The new antivenom undergoing human testing in the USA is effective against envenomations by North American pit-vipers (rattlesnakes, cottonmouths and copperheads in the USA). An additional antivenom is being developed for therapy of coral snake envenomations, using the same production methods.

This venom research is an international undertaking, with research and development in England, Wales, Australia and the USA. Upon completion of the clinical trials this year, the new pit-viper antivenom should be available to the public in 1995 pending approval by the FDA.

The ultimate result will be more effective, less traumatic, lower cost health care for the medical management of potentially life threatening envenomations. The Salt Lake City VAMC Venom Research Laboratory has played a significant role in bringing this product from a basic research state to the present clinical trials. (Reprinted with permission from the VAMC Salt Lake City, et cetera, May/June 1994)

Utah Association of Herpetologists

Intermontanus

Editor: Breck Bartholomew

Assistant Editor: Cynthia Lleyson

Meeting Coordinator: Mike Nordfelt

Membership: \$7.00/year; includes six issues of
Intermontanus

Send correspondence to: UTAH,
195 West 200 North,
Logan UT 84321-3905
(801) 752-0297

Advertisements

Ad Size	Cost
Classified ad:	\$2.00 (members free)
1/8 page:	\$5.00
1/4 page:	\$8.00
1/2 page:	\$12.00
Full page:	\$19.00

© Copyright 1994 Utah Association of Herpetologists. Unless otherwise stated, original articles, notes, etc. published in *Intermontanus* may be reprinted provided: They are not altered; they are properly cited; and the Utah Association of Herpetologists is sent a copy of the publication in which it appears.

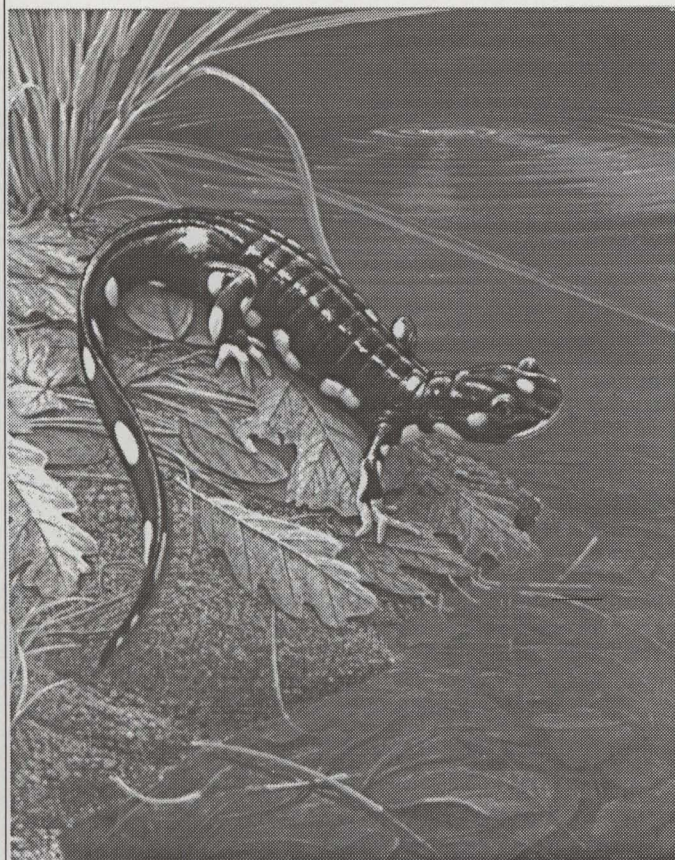
AN UNUSUAL NEW GENUS OF SNAKE WITH WHAT APPEARS TO BE A PARIETAL EYE

The description of a new genus of snake is a rare event now days (Appendix 1). In a recent paper by Bosch and Ineich (1994) a new genus and species of snake is described which appears to have a parietal eye. If this is the case, this would be the only known snake to have a "third eye."

The parietal eye is fairly common in lizards particularly in the families Iguanidae (*sensu lato*), Agamidae, Lacertilidae, and Scincidae (Gundy et al. 1975), but snakes have lost the eye altogether. Gundy et al. (1975) found the parietal eye was more common in lizards from higher latitudes and less common in lizards from equatorial regions. The parietal eye shares many characteristics with lateral eyes including a retina, cornea, and lens. Its functions include photoreception which is different than lateral eyes and appear to be most sensitive to dawn and dusk (Solessio and Engbretson 1993). Research has shown the parietal eye to be important for thermoregulation and reproductive cycles.

The new snake described by Bosch and Ineich is a typhlopoid, *Cyclotyphlops deharvengi*, with a large round scale on the top of its head. The authors are not certain the parietal eye is present because only one specimen was available. The individual has distinct scalation which separates it from other typhlopoid in the area. Hopefully this paper will encourage some one to go to Sulawesi,

1994 CALIFORNIA DEPARTMENT OF FISH & GAME NATIVE SPECIES STAMP



California's 1994 wildlife preservation stamp — featuring a tigersalamander (*Ambystoma tigrinum*) painted by artist Edward Rooks — will be on sale through December 31, 1994. Stamps can be purchased for \$9.75. Purchase of the stamps is a way for wildlife supporters, stamp collectors and art enthusiasts to show their support for the wildlife conservation efforts. Also, available for sale is a First Day of Issue cancelled souvenir envelope retailing at \$13.50, special perforated sheets of four for \$39.00, and a special collector's package including three perforated sheets of four and one limited edition non-perforated sheet of four, for \$156.00. A print will be available later during the year.

Orders can be placed by contacting the California Department of Fish & Game, License and Revenue Branch, 3211 "S" Street, Sacramento, CA 95816.

Indonesia and try to find more specimens. The presence of a parietal eye in a snake may be an important character in the evolution of snakes. However finding such a character in a typhlopoid snake may obscure its usefulness.

Appendix 1.

In the last 25 years, I am aware of only a few descriptions of new genera in snakes and many of these are rearrangements of taxa we already knew about. Below is a list of these new genera and the papers in which they were described.

1969 *Emmochliophis* — Fritts and Smith
 1971 *Bothriechis*, *Bothriopsis*, *Ophryacus*, and *Porthidium* — Berger see Campbell and Lamar 1989*
 1978/9 *Gloydus* — Hoge and Romano-Hoge (not currently accepted, but I like it)

1981 *Rhadinophanes* — Myers and Campbell
 1987 *Senticolis* — Dowling and Fries
 1988 *Bogertophis* — Dowling and Price
 1988 *Brygophis* — Domergue and Bour (originally described as *Perinetia* Domergue 1988, but this name was occupied and the name was changed)
 1992 *Atropoides* — Werman
 1993 *Antaresia*, *Bothrochilus*, *Leiopython*, and *Apodora* — Kluge*
 * These genera were previously described by other authors. The papers cited represent the latest resurrection of the genus.

Literature Cited

- BERGER, W. L. 1971. Genera of pitvipers. (Serpentes: Crotalidae). Ph.D. Dissertation, University of Kansas, Lawrence, KS. 186 pp.
- BOSCH, HERMAN A. J. IN DEN and IVAN INEICH. 1994. The typhlopidae of Sulawesi (Indonesia): A review with a description of a new genus and a new species (Serpentes: Typhlopidae). *Journal of Herpetology*. **28**(2):206-217.
- CAMPBELL, JONATHAN A. and WILLIAM W. LAMAR. 1989. *The Venomous Reptiles of Latin America*. Comstock Publishing Associates, Ithaca, NY. 425 pp.
- DOMERGUE, CHARLES A. 1988. Notes sur les serpents de la région Malgache VIII. Colubridae Nouveaux. *Bull. Mus. Natl. Hist. Nat., Paris*, 4 Sér. **10**(Section A, no. 1):135-146.
- DOMERGUE, CHARLES A. and ROGER BOUR. 1988. *Brygophis* nom nouveau pour *Perinetia* Domergue, 1988, Préemployé (Reptilia, Colubridae). *Bull. Mus. Natl. Hist. Nat., Paris*, 4 Sér. **10**(Section A, no. 4):805-806.
- DOWLING, HERNDON G. and ISABELLE FRIES. 1987. A taxonomic study of the ratsnakes. VIII. A proposed new genus for *Elaphe triaspis* (Cope). *Herpetologica*. **43**(2):200-207.
- DOWLING, HERNDON G. and ROBERT M. PRICE. 1988. A Proposed new genus for *Elaphe subocularis* and *E. rosaliae*. *Snake*. **20**:52-63.
- FRITTS, THOMAS H. and HOBART M. SMITH. 1969. A new genus and species of snake from western Ecuador. *Transactions of the Kansas Academy of Sciences*. **72**(1):60-66.
- GUNDY, G. CRAIG, CHARLES L. RALPH and GLORIA Z. WURST. 1975. Parietal eyes in Lizards: Zoogeographical correlates. *Science*. **19**:671-673.
- HOGUE, A. R. and S. A. R. W. L. ROMANO-HOGE. 1978/9. Poisonous snakes of the world. Part I. Check list of the pitvipers Viperioidea, Viperidae, Crotalinae. *Mem. Inst. Butantan*. **42/43**:179-310.
- KLUGE, ARNOLD G. 1993. *Aspidites* and the phylogeny of Pythonine snakes. *Records of the Australian Museum. Supplement* 19):1-77.
- MYERS, CHARLES W. and JONATHAN A. CAMPBELL. 1981. A new genus and species of colubrid snake from the Sierra Madre del Sur of Guerrero, Mexico. *American Museum Novitates*. (2708):1-20.
- SOLESSIO, EDUARDO and GUSTAV A. ENBRETSON. 1993. Antagonistic chromatic mechanisms in photoreceptors of the parietal eye of lizards. *Nature*. **364**:442-445.
- WERMEN, STEVEN D. 1992. Phylogenetic relationships of Central and South American pitvipers of the genus *Bothrops* (*sensu lato*): cladistic analysis of biochemical and anatomical characters. 21-40 In J. A. Campbell and E. D. Brodie Jr., (eds.). *Biology of the Pitvipers*. Selva, Tyler Texas.

FEATURES

TOXIC TURTLES!

Breck Bartholomew
195 West 200 North
Logan, UT 84321

Most people think of turtles as harmless creatures which make good pets or good soup. But little do those turtle connoisseurs know, their soup may be deadly.

It has long been known that the eastern box turtle (*Terrapene carolina*) will occasionally eat mushrooms and store the toxins in their tissues making them poisonous to eat (Behler 1979). Nevertheless, native Americans and early colonists used to risk death and eat the turtles. In fact, the paucity of turtles between Ohio and New England has been blamed on the New York Indians who ate the turtles, used their shells for ceremonial rattles, and buried turtles with the dead (Behler 1979). Even more curious than poisonous box turtles are poisonous sea turtles.

Halstead (1970) and Limpus (1987) have reviewed sea turtle poisonings and found several interesting things about chelonitoxin (the toxin responsible for these poisonings) and the turtles which carry it. Chelonitoxin is assumed to be a neurotoxin which acts much like ciguatera, except for the nausea and vomiting. Because the sea turtles which are known to be poisonous (hawksbill turtle, *Eretmochelys imbricata*; green sea turtle, *Chelonia mydas*; and perhaps the loggerhead, *Caretta caretta*; flatback, *Chelonia depressa*; and leatherback, *Dermochelys coriacea*) are not always toxic, it is assumed the toxin originates in the turtle's food. The most likely candidates for this toxin's origin are poisonous marine algae or invertebrate animals eaten by the turtles.

Probably the most unusual aspect of chelonitoxin is, occasionally breast-fed babies will be poisoned after their mother has eaten part of a sea turtle. In extreme cases the baby has died without the mother having any ill-effects. More typically, sea turtle poisonings have the

following clinical aspects (as reported by Limpus 1987).

"The symptoms which develop from within a few hours to even a week after the ingestion of poisoned turtle flesh are reported to consist usually of nausea, vomiting, diarrhoea [sic], tachycardia, pallor, severe epigastric pain, sweating, coldness of the extremities and vertigo. Acute stomatitis consisting of a dry burning sensation of the lips, lining of the mouth and throat is sometimes reported; so also in some cases, a sensation of tightness of the chest. Though there is pronounced hypersalivation, swallowing becomes difficult and the patient may be lethargic and unresponsive. The oral symptoms are said to develop gradually and become increasingly severe after a few days resulting in the tongue developing a white coating and eventually becoming covered with multiple pinhead size reddened pustular papules. The pustules may break down into ulcers or persist for several months. Deep reflexes may be diminished. In severe cases somnolence is pronounced. It may be difficult to awaken the patient who gradually lapses into coma which is rapidly followed by death. Children may develop convulsions shortly before death. Death has often been attributed to respiratory failure."

Another unusual thing about sea turtle poisonings is the distribution and the time of year of the cases do not seem to show any distinct pattern (see Table 1). Almost all of the cases have occurred in the Pacific and Indian oceans, but there is one very old case from the Windward Islands in the Caribbean.

Since sea turtle poisonings tend to be isolated and infrequent there have been few studies on the toxicity or characterization of the toxin. As a result the treatment of sea turtle poisoning is experimental and consists of keeping the patient calm and encouraging them to drink to offset dehydration. Respiration should be monitored and the airways should be kept clear, especially if vomiting or convulsions occur. Ventilation should be offered when necessary. If appropriate medical care is available, the following should be considered: intravenous rehydration, prevention of hypoxia, monitoring of vital functions, and in severe cases, suppression of convulsions with appropriate drugs. In addition, any remaining turtle tissue should be frozen as soon as possible for analysis and any identifiable parts of the turtle should be kept. If you happen to be in Australia you can

call the Townsville General Hospital Casualty Section at (008) 015160.

For more information and additional references on sea turtle poison or cases of poisonings see Halstead (1979) and Limpus (1987). All of this information was taken from these two sources.

Literature Cited

BEHLER, JOHN L. 1979. *The Audubon Society Field Guide to North American Reptiles & Amphibians*. Alfred A. Knopf, New York, 220 pp.

HALSTEAD, BRUCE W. 1970. *Poisonous and Venomous Marine Animals of the World*. United States Government Printing Office, Washington, D.C., 1006 pp.

LIMPUS, COLIN. 1987. Sea Turtles. 189-193 In J. Covacevich, P. Davie and J. Pearn, (eds.) *Toxic Plants & Animals: A Guide for Australia*. Queensland Museum, Brisbane, Qld.

Table 1. Distribution of cases of sea turtle poisoning. Reorganized from Halstead (1970) and Limpus (1987).

Date	Locality	Cases/deaths	Species
1697	Windward Islands unknown	2/0	<i>Eretmochelys imbricata</i> ?
10/1840	Panatura, S. of Columbo	28/18	<i>Chelonia mydas</i>
6/1888	Karuppankudiyiruppu	-/12	<i>Eretmochelys imbricata</i>
before 1908	? Queensland	1/0	<i>Eretmochelys imbricata</i>
11/17	Bantayan Is. near Cebu	33/14	<i>Chelonia mydas</i> ?
6/21	Mandativu, Jaffna	24/7	<i>Eretmochelys imbricata</i>
4/23	Vaddukoddai, Northern Province	-/4	<i>Eretmochelys imbricata</i>
1933	"Netherland Indies"	2/1	unknown
before 1935	Torres Strait	5/5	<i>Eretmochelys imbricata</i>
5/3/35	Wooi, Japan Is., West Irian	52/9	<i>Eretmochelys imbricata</i>
1935	Batavia	4/1	<i>Caretta caretta</i> ?
4/26/39	Koryu	57/7	unknown
about 1949	Arorue, Gilbert Islands	-/5	<i>Eretmochelys imbricata</i>
2/5/54	Dinaig, Cotabato, Mindinao	-/11	<i>Eretmochelys imbricata</i>
8/24/54	Kaipuri, West Irian	6/2	unknown
1954	Kimini, Cotabato	-/-	<i>Eretmochelys imbricata</i>
1/2/61	Tuticorin, Tamil Nadu	9/3	<i>Eretmochelys imbricata</i>
5/27/61	Sakthikulangara, Quilon	130/18	<i>Eretmochelys imbricata</i>
4/19/77	Punnaikayal, near Tuticorin	250/5	<i>Chelonia mydas</i>
8/3/77	Manapad near Tuticorin	300/10	<i>Eretmochelys imbricata</i>
before 1979	Talasea Peninsula	35/2	<i>Eretmochelys imbricata</i>
1979	Mollachachi, Kanyakumari Dist.	?/4	unknown
6/80	Tuticorin	-/10	<i>Eretmochelys imbricata</i>
5/22/83	Tuticorin	6/4	<i>Chelonia mydas</i>

BOOK REVIEWS

TRACKING THE VANISHING FROGS: AN ECOLOGICAL MYSTERY

Kathryn Phillips. 1994. St. Martin's Press, New York. 244 pp. \$22.95.

I first heard of this book from a flyer sent out by St. Martin's Press. The information indicated Kathryn Phillips, the author, is a journalist. Immediately I thought "oh no! Just what we need, some journalist writing sensationalism about the amphibian decline." Yes, I have a bias against journalists. It seems they are always after a story and they are more than willing to make a story out of nothing. Fortunately, the issue of amphibian declines is a story, and Kathryn Phillips is not your typical journalist.

The book starts out with an introduction to the herpetologist Mark Jennings. He and the author are headed out in the field. The story evolves into a general introduction to amphibians, the apparent decline of amphibians, and the author.

Next, the book follows Martha Crump as she chronicled the disappearance of the golden toad in Costa Rica. Intertwined in this story is a discussion of what took place at the First World Congress of Herpetology, when it was first realized that amphibians were declining on a global scale. David Wake became an important player at this meeting and the author relates how he organized a meeting in California to discuss the evidence for and against a global amphibian decline.

During the next couple of chapters, the author is in the field with Mark Jennings and Marc Hayes as they survey areas in California for amphibians, particularly ranid frogs. Phillips really captures the essence of fieldwork in these chapters. Interwoven in these chapters is a history of the two herpetologists and of the problems amphibians have faced in California. The author also discusses the importance

of natural history collections and research on preserved specimens.

In the fifth chapter, we find the author in the Los Angeles International Airport while a US Fish & Wildlife inspector examines the day's herpetological shipments. The author proceeds to explain the many human uses of amphibians and their impact on wild populations. Included in this chapter is a visit with Philippe de Vosjoli and Robert Mailloux in which they discuss their captive breeding projects and the American Federation of Herpetoculturists. The role of captive breeding is briefly examined before the author moves on to the story of the gastric brooding frog, *Rheobatrachus silus*.

The idea that ultraviolet-Blight might be the cause of the amphibian decline is examined in detail in chapter six. Starting with field observations and the task of creating hypotheses to explain them, the author presents a complete story which recounts many of the difficulties and realities of science. Anyone who still believes scientific research is open and shared, as ideally it should be, will get a glimpse at the real world of science in this chapter. However, another, more ideal collaboration is presented in chapter seven.

Other possible causes of amphibian decline are pesticides/fertilizers, acid rain, and El Niño currents. Chapter seven tells the story of these possibilities. The following chapter finds the author with Sam Sweet who is working on the arroyo toad, *Bufo microscaphus californicus* (= *B. californicus*). The arroyo toad's decline can be attributed to the fact that it likes the same areas which camper's like. In addition, logging has had an impact as well as some negligent moves by the Forest Service. In this chapter the author also describes a couple of marking techniques and why they are used.

The final chapter, "A place for frogs," relates the story of trying to get the California red-legged frog *Rana aurora* listed as endangered by the US Fish & Wildlife Service. Following this is an introduction to the Declining Amphibian Population Task Force and their mission. Finally, the author answers the question of why frogs matter, in a very personal way.

This book was definitely a pleasant surprise. I practically read it in a single sitting. The author succeeds in relating a lot of information about amphibians and the various issues surrounding amphibian declines in an interesting and easy to follow way. If you have an interest in conservation issues, amphibians, or amphibian declines you will enjoy this book. *Tracking the Vanishing Frogs* is not only informative, it is fun to read.

Breck Bartholomew
195 West 200 North
Logan, UT 84321

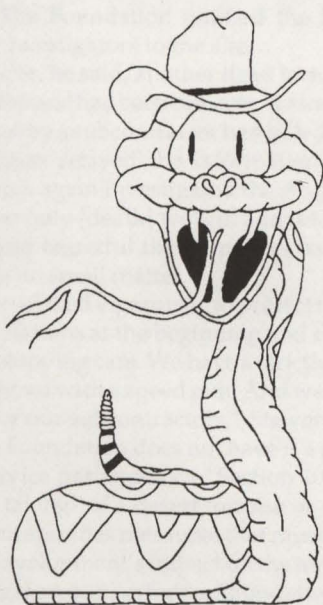
CLASSIFIED ADS

For Sale: Captive born Brazilian Rainbow boas, *Epicrates cenchria cenchria* \$225 each. The babies are due in August. I will get them eating before they are available for sale. Will ship anywhere within the U.S. Contact Breck at (801) 752-0297 for more information.

Free: One male and one female Great Basin gopher snake, *Pituophis melanoleucus deserticola*. Both are long term captives and are feeding on dead mice. Collection data is available. The male is quite orange while the female is a "typical" yellow animal. Contact Breck at (801) 752-0297 for more information.

Wanted: One female Eastern milk snake, *Lampropeltis triangulum triangulum*. Must be captive born. Preferably less than four years old. Contact Breck at (801) 752-0297.

Wanted: Articles, notes, essays, pictures, ads, etc. for *Intermontanus*. I'm sure you're getting tired of always hearing my opinions. Give it a go, I'll help if you want.



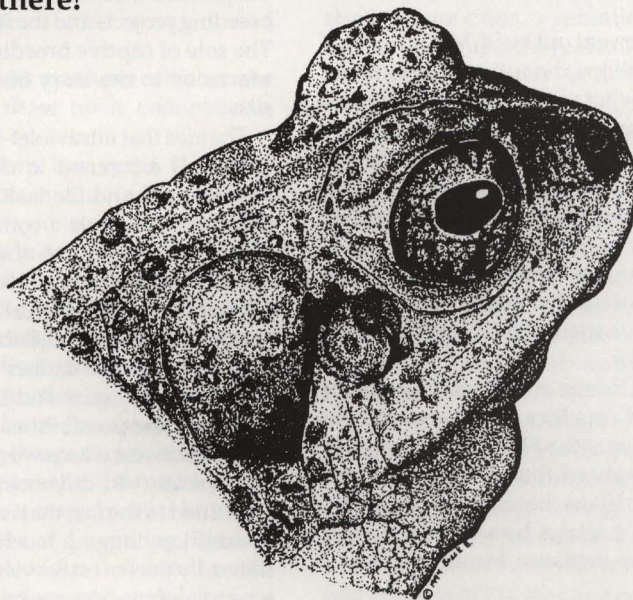
O
P
H
I
D
I
A
N

The Ophidian Herpetological BBS

(602) 837-7305

Multiple Message Bases, New Files Weekly, On Line Herp Vet, Breeders Lists, Herp Society Information, Herp Hunting Reports, Classified Ads, and Offline Readers for Long Distance Callers.

Next Meeting: Wednesday, 27 July 1994 at 7:00 pm in room 212 of the University of Utah's Biology Building. **Dr. Mark Neilsen** will present a talk "**Comparative Locomotion in Turtles.**" After the talk there will be a drawing for a book and a desert tortoise T-Shirt. Also there will be an open discussion about the **pros and cons of herpetological expos.** Call UTAH if you need directions to the U of U Biology building. **See you there!**



Bufo punctatus, Red-spotted toad, from Zion National Park, Utah
© copyright 1994 Breck Bartholomew

Utah Association of Herpetologists
195 West 200 North
Logan UT 84321-3905
USA